


PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 88TY1405	FOR FURTHER ACTION		See Form PCT/PEA/416
International application No. PCT/IB2005/000697	International filing date (day/month/year) 18.03.2005	Priority date (day/month/year) 23.03.2004	
International Patent Classification (IPC) or national classification and IPC INV. F16H63/06			
Applicant TOYOTA JIDOSHA KABUSHIKI KAISHA et al.			
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau a total of 4 sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>			
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input checked="" type="checkbox"/> Box No. VIII Certain observations on the international application</p>			
Date of submission of the demand 12.09.2005		Date of completion of this report 26.05.2006	
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016		Authorized officer Truchot, A Telephone No. +31 70 340-4782	



INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITYInternational application No.
PCT/IB2005/000697

10/591181

Box No. I Basis of the report

1. With regard to the **language**, this report is based on

- ☒ the international application in the language in which it was filed
- ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3(a) and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4(a))
 - ☐ international preliminary examination (under Rules 55.2(a) and/or 55.3(a))

2. With regard to the **elements*** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

Description, Pages

1-14 as originally filed

Claims, Numbers

1-10 filed with the demand

11-13 filed with telefax on 21.04.2006

Drawings, Sheets

1/4-4/4 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/IB2005/000697

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	7,10,11,13
	No: Claims	1-6,8,9,12
Inventive step (IS)	Yes: Claims	11,13
	No: Claims	1-10,12
Industrial applicability (IA)	Yes: Claims	1-13
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

Reference is made to the following documents (D1, D4):

D1: US-B1-6 336 879 (SCHMID JOCHEN ET AL) 8 January 2002 (2002-01-08)

D4: PATENT ABSTRACTS OF JAPAN vol. 1999, no. 10, 31 August 1999 (1999-08-31) &
JP 11 141633 A (FUJI HEAVY IND LTD), 25 May 1999 (1999-05-25)

1. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.

The document D1 discloses (the references in parentheses applying to this document):

A belt type continuously variable transmission in which a pulley shaft (5) is supported by bearings (fig.1) provided at two positions that are apart from each other in an axial direction of the pulley shaft and a supply oil passage for supplying hydraulic fluid to a pulley hydraulic chamber (58) includes a radial direction oil passage (radial passage on the left in fig.1) that is formed in the pulley shaft in a radial direction of the pulley shaft, wherein

- the radial direction oil passage is formed on an outside of an area between the two positions which are apart from each other and at which the bearings are provided (fig.1), and
- an outer peripheral surface of an inner cylindrical portion (28) of a movable sheave (4) that is attached to the pulley shaft contacts and slides (at the level of the seal ring 29) on an inner peripheral surface (26) of a first cylindrical portion (22) of a cylinder member (20).

The subject-matter of independent claim 1 is therefore not new (Article 33(2) PCT).

2. Dependent claims 2-10 and 12 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty or inventive step (Articles 33(2) and 33(3) PCT), the reasons being as follows:

The additional features of dependent claims 2-6, 8, 9 and 12 are known from document D1.

The additional features of dependent claims 7 and 10 merely constitute some of several straightforward design possibilities for the cylinder member from which the skilled person would select, in accordance with circumstances, without the exercise of inventive skill. The constructional arrangement in question for the cylinder member is well known from the prior art, see for example document D4, figure 2.

3. The combination of the features of dependent claim 11 is neither known from, nor rendered obvious by, the available prior art. The reasons are as follows:

The subject-matter of claim 11 precises that the movable sheave is radially supported on the cylinder member in such a way that the load applied by the belt on the movable sheave is partially transmitted to the shaft bearings directly via the cylinder member without being applied to the pulley shaft. In the transmission known from document D1, the load is not transmitted at the level of the seal ring (29) between the outer peripheral surface of the inner cylindrical portion (28) of the movable sheave (4) and the inner peripheral surface (26) of the first cylindrical portion (22) of the cylinder member (20). No part of document D1 itself or any other document of the available prior art would suggest to the man skilled in the art to modify the transmission known from D1 in such a way that radial support with load transmission between the movable sheave and the cylinder member takes place at the level of the seal ring (29).

The combination of the features of dependent claim 13 also seems to be neither known from, nor rendered obvious by, the available prior art.

Re Item VIII

Certain observations on the international application

1. It is clear from the description, paragraphs [0048] and [0049], as well as figures 4a and 4b that the following feature is essential to the definition of the invention:

The outer peripheral surface of the inner cylindrical portion of the movable sheave is radially supported on the inner peripheral surface of the first cylindrical portion of the cylindrical member in such a way that the load applied by the belt to the movable sheave is not completely transmitted to the shaft bearings via the pulley shaft, but is partially transmitted to the shaft bearings via the cylinder member.

This feature is indeed an essential part of the solution proposed in the present application to the problem of avoiding concentration of stress at the level of the radial direction oil passage in order to secure the strength of the pulley shaft.

The expression "contacts and slides" used in the characterizing part of independent claim 1 is too vague and does not indicate clearly that radial support with load transmission takes place between the movable sheave and the cylinder member. Consequently, since independent claim 1 does not contain the above-mentioned essential feature it does not meet the requirement following from Article 6 PCT taken in combination with Rule 6.3(b) PCT that any independent claim must contain all the technical features essential to the definition of the invention.

An new independent claim combining the subject-matter of independent claim 1 with the additional features of dependent claim 11 would seem to overcome this objection and meet the requirements of Article 33(1) PCT with respect to novelty and inventive step (as was already mentioned in Item V, paragraph 3 of the present report).